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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/589,348	08/11/2006	Eiichi Shimizu	1592-0164PUS1	8171

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EXAMINER	
BERNARD, VIJI	

ART UNIT	PAPER NUMBER
1792	

NOTIFICATION DATE	DELIVERY MODE
03/11/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

Office Action Summary	Application No.	Applicant(s)	
	10/589,348	SHIMIZU ET AL.	
	Examiner	Art Unit	
	Viji N. Bernard	1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07/19/2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *11 August 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *03/20/2007*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Japanese Patent No: 2000-355766 to Fumihide et al.

Regarding Claim 1, Referring to Fig (2, 3) Fumihide et al teach that a vapor phase growth apparatus comprising at least a sealable reactor (3, bell jar), a wafer containing member (17, susceptor) installed within the reactor and having a wafer mounting portion (see Fig.2, 3) on a surface thereof for holding a wafer, a gas supply member (4, purge gas inlet, 4c, gas installation tubing, 10, nozzle) (Page 4, Paragraph 0004) for supplying raw material gas towards the wafer, a heating member (7, coil) for heating the wafer, and a heat uniformizing member (16, susceptor in Fig. 2, 8, coil covering in Fig. 3) for holding the wafer containing member and uniformizing heat from the heating member (Page 3, 4, paragraph 0017, 0022), and

wherein raw material gas is supplied into the reactor in a high temperature environment while heating the wafer by using the heating member via the heat uniformizing member and the wafer containing member, to form a film grown on a surface of the wafer (Page 3, 4, paragraph 0017, 0022),

a recess portion (32, crevice/zagury/recess) depressed in a dome shape is formed at a

back side of the wafer containing member (17, susceptor) (Fig.2, Page 3, 4, paragraph 0017, 0019, 0022)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 2-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over 2000-355766 to Fumihide et al in view of Japanese Patent No: 06-124901 to Yoshiyuki et al.

Regarding Claim 2, 3, 4, Referring to Fig (2, 3) Fumihide et al teach the apparatus of the invention substantially as claimed.

But Fumihide et al fail to teach that the ratio of the height and the diameter H/D is between 0.01 and 2.10% and the ratio of the height and the diameter H/D is between 0.50 and 1.50% are within the range.

However, Yoshiyuki et al teach that a MOCVD apparatus which heats a semi-conductor substrate by the induction-heating method and a quartz spacer (10) was infixed between the susceptor and the semi-conductor substrate and this quartz spacer has a top-face in order to laid the semi-conductor substrate and a inferior-surface –of-tongue/dome-shaped recess/spherical shaped recess (10b) (Fig.10) and its radius is 300mm, therefore diameter is 600mm (Page 5, paragraph 0033) and the thickness/height of the quartz spacer is 2.6 mm and 3.0 mm (Page 2, paragraph 0010), therefore the thickness/height of the inferior surface of the tongue is less than the thickness of the quartz spacer (ie between 0.02 and 3.00 mm), therefore the ratio of the height and the diameter H/D is between 0.01 and 2.10% and the ratio of the height and the diameter H/D is between 0.50 and 1.50% are within the range for the purpose of forming a thin film on the surface of a semi-conductor substrate and achieving uniform surface temperature.

Thus, it would have been obvious to one of ordinary skill in the art at the time applicant's claimed invention was made to have provided the ratio of the height and the diameter H/D is between 0.01 and 2.10% and the ratio of the height and the diameter H/D is between 0.50 and 1.50% are within the range in Fumihide et al in order to form a thin film on the surface of a semi-conductor substrate and achieve uniform surface temperature as taught by Yoshiyuki et al.

Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over WO 2003/107403 A1 to Shimizu et al in view of U.S. Patent No: 5,800,622 to Takemi et al.

Regarding Claim 1, Referring to Fig (1) PCT teach a vapor phase growth apparatus (100) comprising at least a sealable reactor (1), a wafer containing member (3, wafer holder) installed within the reactor and having a wafer mounting portion (see Fig.1) on a surface thereof for holding a wafer, a gas supply member (7, gas inlet) for supplying raw material gas towards the

wafer, a heating member (5, heaters) for heating the wafer, and a heat uniformizing member (4, susceptor) for holding the wafer containing member and uniformizing heat from the heating member, and

wherein raw material gas is supplied into the reactor in a high temperature environment while heating the wafer by using the heating member via the heat uniformizing member and the wafer containing member, to form a film grown on a surface of the wafer (Abstract),

But Shimizu et al fail to teach a recess portion depressed in a dome shape is formed at a back side of the wafer containing member.

However, Takemi et al teach a semi-circular concavity (4) is formed on the backside of the wafer holder (1) for the purpose of leading to a uniform surface temperature over the entire gas upstream and downstream areas (Fig. 5, 6, 7) (Col.4, Line 9-35).

Thus, it would have been obvious to one of ordinary skill in the art at the time applicant's claimed invention was made to have provided a recess portion depressed in a dome shape is formed at a back side of the wafer containing member in Shimizu et al in order to lead to a uniform surface temperature over the entire gas upstream and downstream areas as taught by Takemi et al.

Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over WO 2003/107403 A1 to Shimizu et al in view of Japanese Patent No: 2000-355766 to Fumihide et al.

Regarding Claim 1, Referring to Fig (1) PCT teach a vapor phase growth apparatus (100) comprising at least a sealable reactor (1), a wafer containing member (3, wafer holder) installed within the reactor and having a wafer mounting portion (see Fig.1) on a surface thereof for

holding a wafer, a gas supply member (7, gas inlet) for supplying raw material gas towards the wafer, a heating member (5, heaters) for heating the wafer, and a heat uniformizing member (4, susceptor) for holding the wafer containing member and uniformizing heat from the heating member, and

wherein raw material gas is supplied into the reactor in a high temperature environment while heating the wafer by using the heating member via the heat uniformizing member and the wafer containing member, to form a film grown on a surface of the wafer (Abstract),

But Shimizu et al fail to teach a recess portion depressed in a dome shape is formed at a back side of the wafer containing member.

However, Fumihide et al teach a recess portion (32, crevice/zagury/recess) depressed in a dome shape is formed at a back side of the wafer containing member (17, susceptor) for the purpose of preventing warp caused by the differential temperature between the face and reverse sides of the wafer (5) (Fig.2, Page 3, 4, paragraph 0017, 0019, 0022, Abstract).

Thus, it would have been obvious to one of ordinary skill in the art at the time applicant's claimed invention was made to have provided a recess portion depressed in a dome shape is formed at a back side of the wafer containing member in Shimizu et al in order prevent warp caused by the differential temperature between the face and reverse sides of the wafer as taught by Fumihide et al.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Viji N. Bernard whose telephone number is 571-272-6425. The examiner can normally be reached on Mon-Fri 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571-272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Viji Bernard
Examiner
Art Unit 1792

Ram Kackar
Primary Examiner
Art Unit 1792